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REPORT

CD NO.

50X1-HUM

COUNTRY	USSR	DATE OF INFORMATION	1950
SUBJECT	Economic - Coal	DATE DIST.	5 Sep 1950
HOW PUBLISHED	Monthly periodical		
WHERE PUBLISHED	Moscow	NO. OF PAGES	2
DATE PUBLISHED	Apr 1950	SUPPLEMENT TO REPORT NO.	
LANGUAGE	Russian		

THIS IS UNEVALUATED INFORMATION

SOURCE Mekhanizatsiya Trudoyemkikh i Tyazhelykh Rabot, No 4, 1950.

EFFECTIVENESS OF TESTS WITH SOVIET KUZBASS COMBINE

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Heroes of Socialist Labor V. I. Vorob'yev and T. F. Gorbachev and engineers F. P. Kufarev and I. S. Patrushev had begun in 1947 to work on mechanized mine supports which could be used with a mining combine or stripper to form one multipurpose machine. Such supports were constructed by March 1949, and the first experimental model was successfully tried out in connection with a stripper. It was named the Kuzbass combine.

The Kuzbass combine consists of the following units: a stripper which is set in motion by a two-drum winch; self-propelled, shield-like, sectional supports; a mine face scraper conveyer; a transfer scraper; a central control board; a hydraulic pumping installation. All these units are combined to form a single machine controlled by one man from a central control board.

The stripper moves along the mine face and cuts off a layer of coal 200 millimeters thick. The coal which has been removed from the mine face enters the mine face conveyer and is carried to the transfer conveyer, which transports it to the drift conveyer. After the stripper has removed the coal from the mine face, the combine moves forward, cutting, as it goes, the coal remaining in the roof after the passage of the stripper, by means of heavy picks fastened in the top part of the sectional supports.

The sections of the supports keep the roof dependably in place while the supports are in motion and the stripper in operation. The combine handles removal, loading, and transport of coal at the mine face, as well as bracing and control of the roof. It is always ready for work and is stopped only for inspection or repair. Thus, this combine assures the most complete, continuous organization of coal mining.

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Industrial tests of the Kuzbass combine were carried out in 1949 in Kapital'naya Mine of Molotovugol' Trust at an experimental mine face 30 meters long. Conditions of the experiment were difficult. The one-meter-thick seam was irregular (over a distance of 6 linear meters of the mine face the angle of dip varied from 2 to 13 degrees) The pillar of coal to be mined was surrounded on three sides by worked-out area, and it had been in this condition for 3 months before use of the combine The roof was weak.

The combine worked an experimental section 45 meters long without the use of supporting timbers and without manual labor. After the experiment the machine was taken apart, and on inspection it was discovered that the combine was in entirely suitable condition for further use. The advance of the mine face per shift during experiments was 2.4 meters. Labor productivity was triple the average for the same conditions.

The commission of the Ministry of Coal Industry USSR which carried on the mine tests of the Kuzbass combine noted that mechanized sectional shield-like supports dependably absorb mine pressure, and when the main roof subsides they cut it along the sections of the shield. The high-pressure hydraulic system used in the supports was also approved

Assembly of the first industrial model of this combine for a mine face 80 meters long has been completed at the Kapital'naya Mine. Construction of a second Kuzbass combine is being completed. This is intended for a 100-meter-long mine face and will be dispatched to one of the Donbass mines.

Mine experiments with two industrial models will permit new improvements in the construction of the combine.

The Kuzbass combine is expensive to produce, but pays for itself during 4 to 5 months of operation. The following table gives comparative figures for a Kuzbass combine and a cutting machine used with blasting (operations conducted at a mine face 80 meters long in a sloping seam one meter thick).

	Cutting Machine	Kuzbass Combine
Daily output (tons)	183	500
Daily crew of workmen at face	42	24
Productivity of worker along face (tons).	4.37	20.8
Cost of producing one ton of coal (wages, cost of timber, and explosives) (%)	100	20.2

Even more impressive figures will be obtained with practice in using the machine.

Mechanized, shield-like, movable sectional supports can be used in combination with other modern machines as well as with a stripper, e.g., with a Donbass combine, a VOM-2 combine, or a cutting and loading machine. The Kuzbass combine may be used in steeply dipping seams and in both thick and thin ones. Work is still to be done on simplifying the design of the movable, sectional supports and on reducing their cost.

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